International Journal of

Human Factors in Manufacturing

ASPECTS OF DESIGN, OPERATION,
AND MANAGEMENT OF
ADVANCED MANUFACTURING TECHNOLOGY

VOLUME 2

ISSUES 1–4

January 1992–October 1992

An Interscience® Publication
Published by John Wiley & Sons, Inc.

© 1992 by John Wiley & Sons, Inc.

International Journal of

Human Factors in Manufacturing

EDITORS

Waldemar Karwowski, Director
Center for Industrial Ergonomics
Department of Industrial Engineering
University of Louisville
Louisville, KY 40292 USA
wokarwo3@ulkyvm.bitnet
Tel. (502) 588-7173; Fax (502) 588-7397

Gavriel Salvendy
NEC Professor of Industrial Engineering
School of Industrial Engineering
Purdue University
West Lafayette, IN 47907 USA
salvendy@ecn.purdue.edu
Tel. (317) 494-5426; Fax (317) 494-0674

Editorial Board

P. S. ADLER
University of Southern California, USA

M. AKITA
Kyoto Institute of Technology, Japan

R. U. AYRES
IIASA, Austria

S. BAGNARA
University of Siena, Italy

L. BAINBRIDGE
University College, London, UK

P. BRÖDNER
Institut Arbeit und Technik, FRG

H. BULLINGER
Universitat Stuttgart, FRG

C. W. CLEGG
University of Sheffield, UK

W. D. COMPTON
Purdue University, USA

J. A. EDOSOMWAN
Johnson & Johnson Associates, USA

J. R. ETHERTON
NIOSH, USA

H. HENDRICK
University of Southern California, USA

S. L. HWANG
National Tsing Hua University, Taiwan, China

G. H. KUPER
Industrial Technology Institute, USA

A. MAJCHRZAK
University of Southern California, USA

S. M. MILLER
Fujitsu Ltd., USA

D. L. MORRISON
University of Queensland, Australia

V. M. MUNIPOV
VNITE, USSR

K. S. PARK
Korea Advanced Institute of Science and Technology, Korea

J. RASMUSSEN
RISO National Laboratory, Denmark

W. B. ROUSE
Search Technology, Inc., USA

P. SANDERSON
University of Illinois at Urbana-Champaign, USA

D. L. SCAPIN
Institut National de Recherche, France

P. SEPPALA
Institute of Occupational Health, Finland

J. SHARIT
SUNY at Buffalo, USA

T. B. SHERIDAN
Massachusetts Institute of Technology, USA

G. I. SUSMAN
The Pennsylvania State University, USA

M. TACHIBANA
NEC Corporation, Japan

E. ULICH
ETH-Zentrum, Switzerland

R. E. WALTON
Harvard University, USA

L. XU
Chinese Academy of Sciences, Beijing, China

Information and Book Review Editor
PAUL KIDD
Cheshire Henbury
Tamworth House
P.O. Box 103
Macclesfield, SK 11 8UW, UK

Journal Administrator
LAURA ABELL
University of Louisville, USA

Editorial Production
DAVID BLOUNT
John Wiley & Sons, Inc.

The *International Journal of Human Factors in Manufacturing* (ISSN: 1045-2699) is published quarterly by John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158.

Copyright © 1992 by John Wiley & Sons, Inc. All rights reserved. Reproduction or translation of any part of this work beyond that permitted by Sections 107 and 108 of the U.S. Copyright Law without permission of the copyright owner is unlawful. Second-class postage pending at New York, NY, and at additional mailing offices.

The code and the copyright notice appearing at the top of the first page of an article in this journal indicate the copyright holder's consent that copies may be made for personal or internal use, or for the personal or internal use of specific clients, on the condition that the copier pay for copying beyond that permitted by Sections 107 or 108 of the United States Copyright Law.

This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Such permission requests and other permission inquiries should be addressed to the Permissions Department.

Subscription price 1992: $125.00; outside USA: $175.00 (air service and handling included). A personal rate is available to individuals: $65.00 (in USA); $85.00 (outside USA). Please allow four weeks for processing a change of address.

Claims for undelivered copies will only be accepted after the following issue has been received. Please enclose a copy of the mailing label or cite your subscriber reference number in order to expedite handling. Missing copies will be supplied when losses have been sustained in transit and where reserve stock will permit.

Postmaster: Send address changes to *International Journal of Human Factors in Manufacturing*, Susan Malawski, Fulfillment Manager, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158. For subscription inquiries, please call customer service at (212) 850-6645 or write to the above address.

Advertising: Inquiries should be forwarded to Roberta Frederick, Advertising Sales, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158, (212) 850-8832. Advertising Sales, European Contact: Michael Levermore, Advertising Manager, John Wiley & Sons, Ltd., Baffins Lane, Chichester, Sussex PO 19 1UD, England.

Other Correspondence: Address all other correspondence to *International Journal of Human Factors in Manufacturing*, Publisher, Interscience Division, Professional, Reference, and Trade Group, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158.

Manuscripts should be submitted to Professor Waldemar Karwowski at the above address.

The contents of this journal are abstracted in *Cambridge Scientific Abstracts*.

This journal is printed on acid-free paper.

International Journal of Human Factors in Manufacturing, Vol. 2 (4) 405–407 (1992)
© 1992 John Wiley & Sons, Inc. CCC 1045-2699/92/040405-03

International Journal of
Human Factors in Manufacturing

Contents
Volume 2, 1992
Issue 1, January 1992

Representing Organizational Behavior in a Bayesian Belief Network, and Making the Resulting Inferences Accessible to Users 1
T. T. Toth-Fejel, S. J. Clark, and J. D. Kindrick

Interorganizational Collaboration in Manufacturing through Partially Mandated Networks 21
Michael Zanko and Trevor A. Williams

Ergonomic Challenges in Conventional and Advanced Apparel Manufacturing 39
Michael J. Kelly, Daniel J. Ortiz, Dennis J. Folds, and Theodore K. Courtney

Successful Implementation of Occupational Health and Safety Programs in Manufacturing for the 1990s 55
Jorma Saari

Human Factors in Manufacturing: The Need for a Consistent Strategy 67
Bernard Burnes and Hakeem James

Personal Perspective
Perestroika and Human Engineering in the USSR 81
V. M. Munipov

Book Review 87

Issue 2, April 1992

Organization Design for Factory 2000 95
John Bessant, Paul Levy, Clive Ley, Stuart Smith, and David Tranfield

Development of a Symbols Library for the Protection of Health and Safety at Work—Aids for the Planning of Manufacturing Systems 127
Peter Nicolaisen

The Effects of Training Stimuli and Feedback on the Categorization of Welding Defects: A Test of Classification Models 139
Kimberly D. Elsbach and J. Richard Simon

A Process Method for the Design of "Intelligent" Man–Machine Interfaces: Case Study: "The Decisional Module of Imagery" 155
Christophe Kolski, Mustapha Tendjaoui, and Patrick Millot

Impact of Flexible Production Philosophy and Advanced Manufacturing Technology on Organization and Jobs 177
Pentti Seppälä, Eva Tuominen, and Paavo Koskinen

Personal Perspective
Misguided Flexibility: Workers Again Becoming Machines 193
Dennis E. Kroll

Book Review 199

Issue 3, July 1992
Special Issue
Interdisciplinary Manufacturing Systems Design

Guest Editorial: Interdisciplinary Manufacturing Systems Design 205
Paul Kidd

Forward: The Industrial Relevance of Interdisciplinary Manufacturing Systems Design 207
Andrew Ainger

Interdisciplinary Design of Skill-Based Computer-Aided Technologies: Interfacing in Depth 209
P. T. Kidd

Introducing Manufacturing Technologies: The Quest for Methods and Tools 229
Henk Bolk

Questioning Analysis and Design Methods in Development of Interdisciplinary Manufacturing Systems Design: The Case of CIM-OSA 243
Erling Havn

HITOP-A: A Tool to Facilitate Interdisciplinary Manufacturing Systems Design 255
Ann Majchrzak and Les Gasser

On the Interdisciplinary Design of Human-Centered Knowledge-Based Systems 277
John Kirby

The Dual Design Approach as a Tool for the Interdisciplinary Design of Human-Centered Systems 289
Armin Bohnhoff, Dietrich Brandt, and Klaus Henning

Issue 4, October 1992

Task and Reliability Analysis of Lathe Operation 311
Edward Pines and Joseph H. Goldberg

The Effects of Assigning Progressively Harder Production Standards with Feedback on Worker Productivity and Satisfaction 325
Ashraf A. Shikdar and Biman Das

The Effects of Information Aids on Fault Diagnosis Performance in Process Control Systems 339
Sheue-Ling Hwang and Hung-Wen Cheng

Toward a New Model for Rationalization and Labor Relations in the Finnish Paper Industry 355
Tuomo Alasoini

Evaluation of Worker Workload in Flexible Manufacturing Industry 369
Kurt Landau and Walter Rohmert

Safety Aspects in the Use of Radio-Controlled Cranes in Finnish Industry 389
J. Pesonen and K. Lahtinen

Book Review 397
Volume Contents 405
Author Index 409